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FISHERIES RAW MATERIAL

Comparison of the keeping quality of capelin containing and not containing feed

Johann Gudmundsson
Haraldur Gunnlaugsson

Some difficulties were encountered in freezing of capelin during the latest capelin fishing season because considerable quantities of capelin full of feed were fished during the season. Capelin full of feed have so far not been fished to any extent since freezing of capelin was started, although insignificant quantities of feed have been noted in capelin.

Capelin full of feed were fished for a few days during the fishing season only. Two samples of fresh capelin were taken on February 14 in Grindavik. The keeping quality of fresh capelin was followed. Portions of the samples were also frozen, thawed later and observed for keeping quality.

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Examination results were as follows:

14.2.1974:

I. Fishing location: West of Westmann Islands.
Fishing time: Early in the morning of 14.2.
The cargo arrived in Grindavik at 8:30 hrs.
The sample was taken at 11:00 hrs. Spawners only were taken.

II. Fishing location: At Reykjanes
Fishing time: The morning of 14.2.
The cargo arrived in Grindavik at 13:00 hrs.
The sample was taken at 14:30 hrs. Spawners only were taken.

The capelin in Sample I contain no feed. Sample II contains considerable amounts of feed. The feed was highly digested and it was therefore not possible to analyze it. However, it was likely mostly copepods, etc. (ljosata). 2

The bellies contain unequal quantities of feed or none at all. The quantity of feed is broken down as follows:

0 = no feed
1 = some feed
2 = considerable feed
3 = much feed - full

Of each sample, about 150 fishes were frozen, stored unprotected = 100, examined immediately = 100.

Examination of capelin

14.2 I. At 16-18:00 hours Appearance good, fresh, no spoilage. Feed: 0 100 fishes were examined. Bellies with contents of 100 fishes weighed 36.6 g.	14.2 II. At 16-18:00 hours Appearance good, fresh, no spoilage. Feed category: 0 = 15 fishes 1 = 22 fishes 2 = 35 fishes 3 = 28 fishes Total = 100 fishes Bellies with contents of 100 fishes weighed 95.4 g.
15.2 At 9:00 hours 10 fishes were examined. The temperature of the fish was 11°. Feed: 0 Some fraying* of rib bones can be seen in smallest capelin and those containing the most roe. No spoilage in other respects.	15.2 At 9:00 hours 10 fishes were examined. The temperature of the fish was 11°. Feed category: 0 = 1 fish 1 = 2 fishes 2 = 4 fishes 3 = 3 fishes 10 fishes Two capelin with holes in the belly. All capelin have small gray blemishes seen through the skin. The belly is susceptible. Feed category 3 is the worst.
At 14:00 hours 40 fishes were examined. Feed: 0 Very little change from the previous examination. Broken ribs	At 14:00 hours 40 fishes were examined. Feed category: 0 = 5 No obvious spoilage. Rib bones depressed.

3

* Literal translation. Translator's note.

in the 6 smallest capelin.

1 = 9 fishes. Ribs loose in many places. Small blemishes in the skin.
2 = 14 fishes. Ribs loose. Blemishes in the skin. 6 fishes with holes in the belly.
3 = 12 fishes. Ribs loose. Holes in the belly, most with grey blemishes.

At 17:30 hours
25 fishes were examined.
Feed: 0
Redness in gill slits and spawn holes. No foul smell noted.
Not strong, and would still be processed.

At 16:00 hours
50 fishes were examined.
Feed category:
0 = 8 No obvious spoilage, rib bones depressed or broken.
1 = 14 fishes. Ribs loose in many places. Small blemishes in most, particularly over ribs.
2 = 12 fishes. Spoilage in all can be seen from the outside.
3 = 16 fishes. Much spoilage can be seen in all from the outside.
Capelin with a lot of roe are worst.
Considerable foul smell at gills.

16.2
At 10:00 hours
25 fishes were examined.
Feed: 0
Rib bones loose in many places.
Blemishes in the skin. Foul smell beginning to be noted at gills.

Examination of frozen capelin

24.6.1974

Samples that were frozen on 14.2 were thawed and examined. The capelin were stored at 10-12°C.

Sample I, empty of feed.

At 16:30 hours. Appearance good.

No spoilage.

50 fishes were examined.

Sample II, considerable feed.

At 17:00 hours. Appearance good.

No spoilage.

Feed: 0 = 7 fishes
1 = 16 fishes
2 = 13 fishes
3 = 14 fishes
Total: 50 fishes

25.6

At 10:00 hours

Some fraying, particularly in smallest capelin and those with the most roe. 50 fishes examined.

25.6.

At 11:00 hours

Categories of feed unchanged.

Unspoiled:	1
Rib bones frayed and broken:	7
Some ribs can be seen through the skin. Rib bones loose:	16
Holes in the belly, grey blemishes in the skin. Rib bones loose:	26
	=50

At 16:00 hours

Reddish tinge in the cheeks. Skin thin (taut) and can be seen through in many places, particularly in roe-filled capelin (looks like grey blemishes in the skin). Rib bones frayed and loose in many places.

No foul smell was noted, but fresh fish smell mostly gone at gills.

50 fishes were examined.

At 16:30 hours

Little spoilage, nearly no defects, no feed, little roe:	2
Grey blemishes in the skin, loose and frayed ribs, spotted belly lining:	20
With holes in the belly	28
No foul smell, but smell of dead fish from the gills.	
	=50

	26.6	5
	At 08:00 hours	
Strong foul smell comes from the capelin.	Strong foul smell comes from the capelin.	

Results:

The first indications of spoilage in capelin containing no feed were: Foul smell from the gills and broken rib bones in the smallest fishes.

Capelin containing feed had the following indications before foul smell from the gills was noticeable: Red tinge in gill slits and spawn holes. Broken and frayed rib bones. Grey blemishes in the skin and holes in the belly. The more feed, the more spoilage. Small capelin are more susceptible to spoilage than large capelin.

A large quantity of roe in the fish seems to accelerate spoilage.

No spoilage is seen in the capelin due to freezing but, once thawed, their keeping quality is less that that of fresh, unfrozen capelin.

Freezing of capelin containing feed is not advisable because digestive fluids continue their action during thawing and cause damage even if the capelin were frozen so fresh that no belly spoilage was noted.